

The Prevalence and Parasitic Load at Sheep by *Dicrocoelium dendriticum* Through Postmortem Diagnosis



Veterinary Medicine

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Abstract

The study was conducted during a calendar year in slaughterhouses. The aim of this study was to determine the level of infestation of parasites and parasitic load in the livers of adult sheep in Lushnja district. We examined a total of 232 livers. The prevalence of infestation of the liver proved to be 42.24 % of the heads of the examined samples. Infestation with *Dicrocoelium dendriticum* proved to be a highly prevalent parasite in the liver of sheep in the area of Lushnje. Parasites found in each liver was collected, was differentiated according to trigger parasitic characteristics and were counted for each sample to calculate the parasitic load of the body. The level of infestation with *Dicrocoelium dendriticum* resulted so higher in damaging the productivity of sheep. Examination postmortem of liver can provide data of interest for *Dicrocoelium dendriticum* parasitism in sheep. Results require that research and diagnostic needs use of antihelminthic permanently programmed to maintain productivity and condition of these animals in the region and beyond.

1. Introduction

Dicrocoelium dendriticum is a common parasite of sheep liver in Albania. It is common in many parts of the world (Ahmadi, N.A. *et al.*, 2010) especially in the most countries bordering the Mediterranean Sea due to the geophysical conditions that predispose the biology of parasite (Otranto D, *et al.*, 2002; Gideon, 2009). It is a chronic parasitic disease in sheep and causes damage in the livers of sheep and can lead to considerable economic loss (Bizhga, B. 2013). *Dicrocoelium dendriticum* spends his life inside the liver, the final host. After fertilization the eggs come in faeces. The first intermediate host snails are terrestrial and our country has almost ideal conditions for their biology (Bowman D.D., 1999). The second intermediate host is an ant (*Formica* spp.) very common in Mediterranean countries (Bizhga, B. 2013; Soliman M.I. *et al.*, 2012). And brings damage to the liver and chronic subclinical diseases that usually results in decreased production of meat, milk and wool. Can be combined with secondary bacterial infections, fertility problems and brings great expense needed to anthelmithics (Bizhga, B. *et al.*, 2011). Due to insufficient data for lancet, favorable conditions of the area, the lack of specific diagnosis, accurate application schemes antihelminthic this parasite brings considerable damage in sheep in the area. Study was to define the prevalence of infestation in animals slaughtered and calculation of infestation in these animals in the slaughterhouse examination (Kassai T, 1999).

2. Material and methods

The study was carried out in slaughterhouses of Lushnja district during 2012. *Samples*: 232 liver of sheep were examined by necropsy. Parasites were collected, differentiated and counted. To identify the level of infestation with *Dicrocoelium dendriticum* were examined livers from sheep in different slaughterhouses originating from Lushnja district. The age of sheep examined were over 1 year old which were classified in such a physical examination of the body and the housing (Bowman D.D., 1999; Kassai T, 1999). City of Lushnja for geophysical characteristics found in the Western Lowland of Albania and is classified as lowland area. Initially was determined weight of every sheep liver and then from any liver was taken a sample in center which was weight to find the ratio of its weight to that of the whole body. The sample was cut into small pieces with dimensions of 1 x 1 x 1 cm, which was placed in a container with 250 cc distilled water and squeezed by hand in order to go out all the parasites that were into the sample. It carries 2-3 rinse out and sediment was collected in a vial to achieve gradual sedimentation. After sedimentation the supernatant was poured through petri plates and has been examined. Differentiation of *Dicrocoelium dendriticum* parasites has been realized based on their morphological characteristics and for each sample was conducted the count of parasites with stereomicroscopes that was found in sample and *Dicrocoelium dendriticum* number was calculated for the entire liver and by the triplet rule was determined the helminthic loads in all liver (Bowman D.D., 1999; Kassai T, 1999; Goater, C.P., *et al* 2007). To assess the level of infestation has been proceeded with 3 levels. Has been considered slight infestation to livers in which were found up to 1000 *Dicrocoelium dendriticum*. Middle infestation was estimated to 3000 *Dicrocoelium dendriticum* and 3000 *D. dendriticum* heavy infestation (Kara, M., *et al*, 2009).

3. Results and discussion

A number of 232 sheep liver were examined through assessing postmortum during all months of 2012. The data from postmortum control in sheep by months has been presented in the table.

Tab. No 1. The results of postmortum control in sheep.

Nr.	Sampling month	Examined (livers)	Positive (number)	Prevalence %	Parasitic load		
					Minimum	Maximum	Mean \pm SD
1	January	19	12	63.15	170	4820	410 \pm 263
2	February	21	9	42.85	94	3230	240 \pm 173
3	March	14	6	35.7	68	2640	186 \pm 192
4	April	17	7	41.17	40	2910	158 \pm 221
5	May	25	8	32	20	1160	132 \pm 118
6	June	18	6	33.33	30	1030	126 \pm 252
7	July	22	9	40.9	60	1240	160 \pm 121
8	August	15	4	26.66	40	2680	135 \pm 208
9	September	18	6	33.33	80	3660	288 \pm 352
10	October	16	7	43.75	130	2820	332 \pm 184
11	November	22	10	45.4	60	3400	180 \pm 136
12	December	25	14	56	90	4220	260 \pm 250
13	Total	232	98	42.24	20	4820	308 \pm 232

The data of the liver postmortum control sheep was noticed a prevalence areas and evaluated a parasitic load. What should highlight is the fact that in the winter are more heads discovered with serious invasion than in other seasons. The month with the highest prevalence of infestation resulted January 63.15% of controlled headings. The month with the lowest prevalence has been resulted August, 26.66 % positive headings. Results are consistent with data from *Dicrocoelium dendriticum* invasion in our country. Due to the long life of parasites in winter are more *Dicrocoelium dendriticum* in livers of sheep. Results show that dicrocoelosis is part of the most common parasitic in sheep in the area (Otranto D, *et al*, 2002; Gideon, 2009). The influence of climatic factors is great for biological cycle of this parasite and more evident in Lushnje. Cold and rainy winter reduce the vitality of the intermediary. Warm and dry weather favors the ant activity and when it is interrupted from time to time by the short rains, stimulated in maximum the activity of snails, increasing the level of infestation of pasture and final hosts. Infested ants are present in our pastures in March. This is part of surviving from the previous year cycle. Further they grow in number and infested initially blocked by cercariae winter of course right molluscs that eliminate clot spittlebegin in March and follow new cycles (Kara, M., *et al*, 2009). During the start of October ants in pastures and reduced host end by the end of December will carry only adult forms. Mollusks infested may continue until the end of November by the parasite canned until next spring. The number of animals per unit area of pasture affects the prevalence of the disease. Increasing the number of animals grazing in permanent use of positivity downgrades and vice versa, reducing the number of heads increases the level of positivity (Dicrocoeliasis, 2009). In total resulted 42.24 % of control while heading being a burden parasitic distinguish which severely damaging to the production of sheep in the area. In cases of major infestation in the liver were noted as macroscopically visible alteration signs periangiocholitis, angiocholite and chronic hepatitis and chronic interstitial even clear signs of sclerosis of the body (Daryani R, *et al* 2006). Evaluating the study data after processing with PSS for Windows perceive that the results are very disseminate about meridians. This happens for the reason that the results obtained vary greatly in their approximate values and examined the number of samples that can be considered small for this processing. The study shows that the determination of the level of morbidity from dicrocoelosis animals can also be achieved by controlling the liver in shambles. Therefore the data about the invasion and their consequence must treated with attention because of them can be provided irreplaceable data for the epidemiological monitoring in the territory where animals act. If we judge on the level of infestation postmortem control data were grouped into three levels based on the degree of invasion of the liver of dicrocoelium.

Tab. Nr. 2. Necropsy examination results by the level of liver invasion

Number	Level of infestation	Samples	%
1	Low infestation	45	48.9
2	Middle infestation	26	29.3
3	High infestation	21	22.8
4	Total	92	

The data in the table show that the method of necropsy examination of liver can provide valuable data for the level of invasion and liver from *Dicrocoelium*. Necropsy examination data showed that about 50 % of the headings positive result considering the level of light. About 30 % of the positive heads resulted in average infestation. While the level of heads with heavy infestation resulted in about 23 %. These data can often be closer to reality than necropsy examination because the number of eggs deposited by parasites in faeces is not always proportional to the size of their population (*Dicrocoeliasis*, 2009). Number of eggs in faeces of sheep conditioned by many factors such as age of the population, season, skills reagueese to hosts, physiological condition at the time of assessment, weather conditions at the time of assessment and the daily rhythms of egg deposition ea (Otranto D, *et al*, 2002). Therefore the data for intensinvasion and its consequences should be treated with caution and always checks perspective of epidemiological and conditioning of the animal health situation. A parasitic load on 3000 *Dicrocoelium* liver should be considered in a very serious and very damaging to production in sheep (Kassai T, 1999; Goater, C.P., *et al* 2007). By comparing these with data indicative of literature in general result that our data do not always approach with those of other authors. They still have a tendency communion with data provided by researchers from Mediterranean countries, but significantly higher. This is explained by changes in the geographic position of countries where studies have been made of which depend on the respective climatic conditions (Kara, M., *et al*, 2009; Gideon, 2009). In our data directly affect veterinary periodic lack of control for the cause, diagnosis often lack concrete, regardless of the type of diagnosis used. However what is evident is the lack of accurate antihelminthic schemes and not the realization of the antihelminthic rotations (Bizhga, B. *et al*, 2011). We think that the lack of rotations of antihelminthic led to trigger resistance and can be full inscribed with the highest level of lancet *Dicrocoelium dendriticum* infestation in sheep in the area.

4. Conclusions

From postmortem examination of the liver of sheep infested resulted from *Dicrocoelosis* headings 42.24% of control. Result show that the level of infestation have tended to be higher in the winter because we have accumulated invasion period all year. Resulted in slight infestation about 50% of headings, with the average around 30% infestation and heavy infestation of about 20% of the positive heads. Percentage of sheep with heavy infestation indicates that *dicroceliosis* is endemic in the area and undermines production activity in sheep. *Dicrocoelosis* high prevalence in sheep in the area can result in significantly reducing the production of meat, milk and wool, infestation of secondary bacterial infections and fertility problems. It is necessary to conduct further studies on etiological and epidemiological find ways to fight the infestation of lancet Lushnja area and wider in Albania. Since the parasitic loads of sheep in the area during the necropsy examination results parameters such shock that can cause livestock production is necessary to perform permanent monitoring, antihelminthic with rotations of antihelminthic in September and at the end of winter.

5. References

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